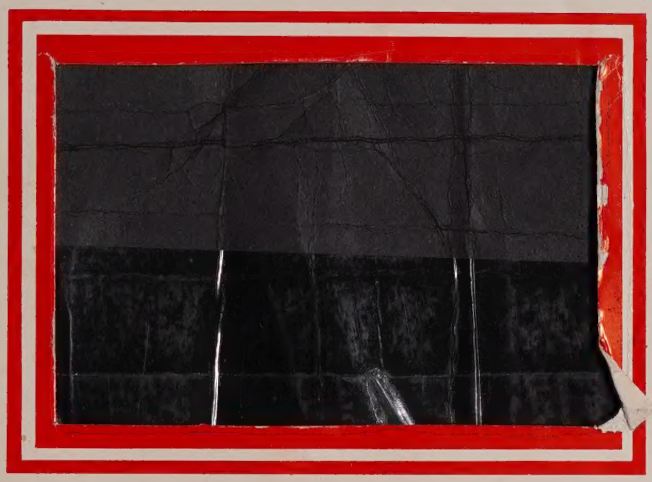

TEMPORARY

NEMS CLARKE CO.

919 JESUP BLAIR DRIVE • SILVER SPRING, MARYLAND

A DIVISION OF Vitro CORPORATION OF AMERICA

INSTRUCTION BOOK

FOR

MODEL MC-202

AIRBORNE RF MULTICOUPLER

NEMS-CLARKE COMPANY
919 Jesup-Blair Drive
Silver Spring, Maryland
A Division of VITRO Corporation of America

WARNING

This equipment employs voltages which are dangerous and may be fatal if contacted by operating or maintenance personnel. Extreme caution should be exercised when operating this equipment with any of the protective covers removed.

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PERFORMANCE SPECIFICATIONS, RF MULTICOUPLER

MODEL MC-202

Pass Band	215 to 260 mc.
Uniformity of Response	Within 1 db of mid band response.
Gain	Approximately unity.
Impedance	Designed to operate in 50 ohm system.
Receiver Ouputs	8
Isolation	35 db minimum
Power Source	115 volts 50 to 450 cycles.
Size (in)	10-3/4 x 11-1/2 x 18-1/4
Power Consumption	17 watts

TABLE 1-2

SEMI-CONDUCTOR AND TUBE COMPLEMENT

Symbol	Type	Function
CR-101	IN539	1/4 Bridge Rectifier
CR-102	IN539	1/4 Bridge Rectifier
CR-103	IN539	1/4 Bridge Rectifier
CR-104	IN539	1/4 Bridge Rectifier
V-101	5842/417A	First R.F. Amplifier
V-102	5842/417A	Second R.F. Amplifier

SECTION 1

GENERAL DESCRIPTION

1-1. PURPOSE OF EQUIPMENT.

The Model MC-202 R.F. Multicoupler is designed for use in an Airborne Telemetry Receiving and Recording System. When it is used in conjunction with the Model PR-202 RF Preamplifier, it receives an amplified and improved (with respect to signal-to-noise ratio) RF signal within the assigned telemetry spectrum of 215 to 260 mc. It then distributes this improved signal to as many as eight different telemetry receivers through an eight-output resistive coupling network which maintains a high degree of signal isolation between the individual receivers. The Multicoupler may be used with the Preamplifier, or it may be separated from the Preamplifier while using seventy-five (75) feet of type RG-8/U coaxial cable connected to their respective input and output within an Airborne Telemetry Receiving and Recording System.

1-2. DESCRIPTION OF EQUIPMENT.

The electrical components of the R.F. Multicoupler are mounted in and on an aluminum chassis and front panel designed for standard 19 inch relay rack mounting. The chassis fits into a protective housing, to which it is secured by screws through the front panel. The assembly is then secured to a shock-mounting frame for attachement to a shelf or other designated surface within the aircraft. Approximate overall dimensions of the equipment, with shock mounts are: 2-" wide by 13" deep by 9-1/2" high. The weight of the complete equipment is approximately 16 lbs. Table 1-1 lists the Performance Specifications of the Multicoupler, while Table 1-2 shows the Semi-Conductor and Tube Complement.

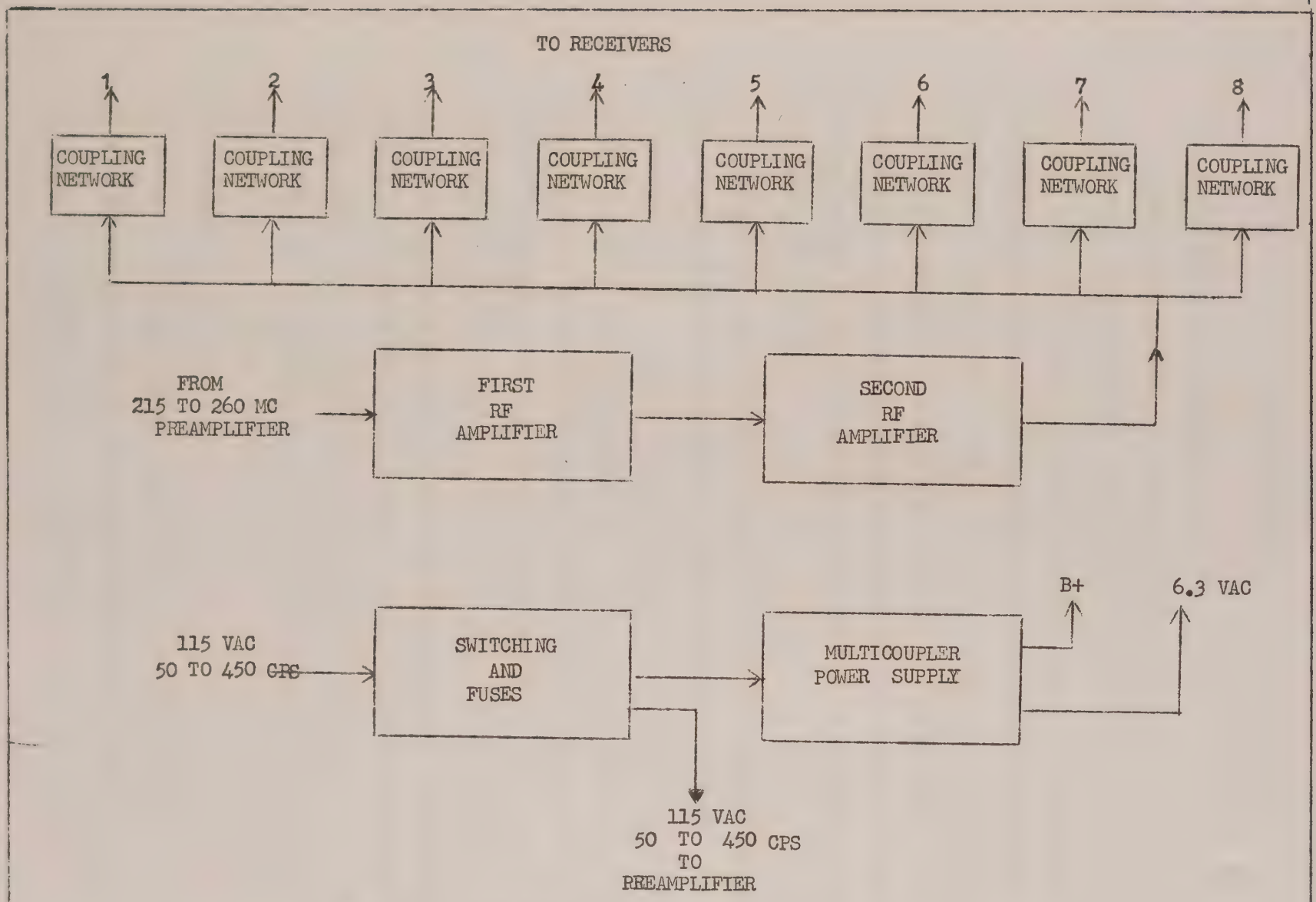


FIG. 2-1. BLOCK DIAGRAM, MODEL MC-202 RF MULTICOUPLER.

SECTION 2

THEORY OF OPERATION

2-1. MODEL MC-202 RF MULTICOUPLER, GENERAL.

The Model MC-202 RF Multicoupler consists of two RF amplifiers that feed an eight output resistive network that divides the signal in such a way as to provide eight independent receiver outputs. The passband of the multicoupler is from 215 to 260 mc, and has a uniformity of response in this band within 1.0 db. The gain of the multicpupler is approximately unity. The minimum isolation between receiver outputs is 35 db. The multicoupler operates from a nominal power source of 115 VAC, 50 to 450 cps. A block Diagram of the Model MC-202 multicoupler is shown in Figure 2-1.

2-2. FIRST RF AMPLIFIER.

The signal from the preamplifier is applied to the input jack, J-102, on the front panel of the multicoupler, and is then applied across the variable capacitor, C-101, and through the LC combination L-101 and C-102 to the cathode of the First RF Amplifier, V-101, a type 5842/417A vacuum tube. L-101 consists of a 7/16 inch lead of C-102. Cathode resistor methode of obtaining self-bias is used in this amplifier, the resistor, R-101 developing a bias proportional to the current through itself of approximately 10.6 volts dc. Cathode resistor by-passing is provided by the capacitor, C-103. A negative voltage of approximately 10 volts dc is applied to the negative end of R-101 thus nullifying a portion of the voltage developed and reducing the effective bias voltage to approximately 0.6 volts dc.

2-3. FIRST RF PLATE LOAD.

The plate load for the First RF amplifier consists of the self-resonant series inductor, L-103, the coupling inductor, L-104, and a series tuned circuit consisting of L-105 and C-107.

This plate load forms a modified "T" network that serves to match the relatively high-impedance of the First RF amplifier plate circuit to the low input impedance of the cathode of the following stage. This network also acts as a bandpass filter to provide the proper interstage response. Capacitors, C-105 and C-106 act as plate decoupling capacitors.

2-4. SECOND RF AMPLIFIER.

The signal from the modified "T" interstage network is applied to the cathode of the second RF amplifier across the inductor, L-106. Cathode resistor method of obtaining self-bias is used in this amplifier, the resistor, R-103 developing the bias, and capacitor, C-108 providing cathode resistor bypassing. The resistor, R-103 develops approximately 10.6 volts dc across itself, 10 volts dc of which is nullified by the application of 10 volts minus from the power supply, leaving an effective bias of approximately 0.6 volts dc.

2-5. SECOND RF PLATE LOAD.

The second RF amplifier plate load consists of series tuned inductor, L-107 coupling inductor L-108, and two parallel capacitors, C-115 and C-111, that serve a double purpose, namely tuning L-107, and preventing the application of B plus to the resistive output coupling networks that feed the various receivers. This network also acts as a bandpass filter to give the overall response the proper shape and to assure sufficient bandwidth to cover the entire telemetry spectrum from 215 to 260 mc.

2-6. RESISTIVE OUTPUTS TO RECEIVERS.

Eight resistive terminations are used to match the output of the Second RF Amplifier to the coaxial transmission line that feeds the input of the receivers used with the MC-202 Multicoupler. Each consists of four resistors in a modified pi network that assures a minimum of 35 db isolation between receiver outputs, and at the same time maintains a constant 50 ohm output impedance.

Variations in load on the plate circuit of the second RF amplifier are thereby minimized, and a constant output is guaranteed.

2-7. POWER SUPPLY.

115 VAC, 50 to 450 cycles, single phase, alternating current is applied through the jack, J-101, to the power switches and the primary of the power transformer, T-101. Switch S-101 and pilot lamp assembly, DS-102, control the power to the preamplifier when used with the Multicoupler. T-102 is a current transformer used to operate DS-102 when the Preamplifier is drawing current through the primary windings. The power transformer, T-101, applies high-voltage AC to the Bridge rectifier consisting of CR-101 through CR-104 and the resulting pulsating DC is filtered by a conventional capacitive input LC filter. The power supply voltage divider network, consisting of R-137 and R-138, supply approximately 105 volts positive, and minus 10 volts dc. AC output to the preamplifier or other accessory equipment is supplied through the jack, J-101.

SECTION 3

INSTALLATION AND OPERATION

3-1. INTRODUCTION.

The shipping container for the RF Multicoupler, Model MC-202 consists of an outer and inner corrugated container, with necessary padding to prevent damage to the unit in shipment. When unpacking the unit, great care should be taken that crowbars or other hard, sharp instruments do not come in contact with the equipment; as such contact may cause damage to finished surfaces or external components. After unpacking, the unit should be thoroughly checked for any broken or loose parts. As received, the unit is completely assembled with chassis housing and shock mount frame, and all internal connections are complete.

3-2. SITING.

Since the RF Multicoupler is designed for airborne use, it will be located at a previously selected position within the aircraft. The metal shelf or other surface reserved for this use must be prepared so that the shock mounting of the RF Multicoupler can be securely attached. This is to be accomplished as explained in paragraph 3-4 below.

3-3. UNPACKING.

The RF Multicoupler weighs approximately 23 lbs. packed, and the packed dimensions are approximately 30 x 23 x 19 inches. It should be unpacked as follows:

(a) Carefully open the outer container and remove the inner container.

(b) Open the inner container and lift out the Multicoupler, removing all pads and cushioning material necessary to accomplish this.

(c) Remove and set aside all packing material, carefully checking to see that no components of the equipment are missing.

(d) Check the Multicoupler for possible damage during shipment. To facilitate this, loosen the six mounting screws on the front panel and remove the chassis from its housing. Make a visual inspection of the circuit wiring to insure that all electrical connections are intact. All tubes should be checked to see that they make good contact in their sockets.

(e) Loosen the wing-nuts at the front of the shock-mounting frame. Remove the Preamplifier from the frame and store it in a safe place until mounting arrangements have been completed. The shock-mounting frame is now ready to be attached to the mounting surface.

3-4. INSTALLING THE EQUIPMENT.

Refer to the installation drawing, Figure 3-1, The dimensions shown, in the front and side views, in reference to the shock-mounts, will establish the location of the 16 mounting holes necessary to attach the shock-mounting frame to the mounting surface. After the hole locations have been measured and marked, it will be seen that they form four groups of four holes each, corresponding to the mounting holes in the four shock mounts. Before drilling the holes, the locations should be carefully checked against the actual dimensions of the shock-mounting frame. Drill the holes, using a 7/32 inch drill bit. Position the shock-mounting frame over the holes with the wing-nut clamps to the front, and attach with mounting hardware (not supplied) consisting of #10-32 binding-head machine screws, nuts and lockwashers, or preferably, ESNA stopnuts, type 68M-02. The screws should be inserted from the top, so that the nuts are beneath the mounting surface. Holes have been provided in the shock-mounting frame to permit screwdriver access to the inner mounting screws.

However, if close quarters should make access to the outer mounting screws difficult, it may be necessary to remove the frame from the shock mount, and re-attach it after the shock mount is secured in position, using the single large Phillips head screw provided. Grounding straps on the mounting frame should be attached by bending until the free end can be inserted under the adjacent shock-mount and secured by the mounting screw. After the mounting frame is firmly attached, it is ready to receive the Multicoupler. After the Multicoupler is returned to its protective housing and secured by the six panel-mounting screws, slide the entire assembly into the shock-mounting frame from the front until the indentations in the rear of its base engage the spring-loaded studs at the rear of the shock-mounting frame.

3-5. ELECTRICAL CONNECTIONS.

All internal electrical connections of the RF Multicoupler are complete. There are ten external connectors on the unit: The Power Input connector, J-101, is located on the rear apron of the chassis, and access is provided through the rear of the chassis housing. From J-101, connections are made to the main power source of the aircraft and to the power input of the RF Preamplifier. A signal Input Connector (from the R.F. Preamplifier) is provided on the front panel of the Multicoupler. Eight Output Connectors (to telemetry receivers) are provided, also on the front panel. All connectors are labeled with their appropriate functions by adjacent stencilled or engraved titles. When all connections have been made, the Multicoupler is ready for operation.

3-6. OPERATION, GENERAL.

The Model MC-202 Multicoupler is intended for use with a Preamplifier similar to Model PR-202 which derives its AC power from the Multicoupler, and has no internal switching or fusing facilities.

For this reason, the Multicoupler, has power switches, fuses, and current operated pilot lamps, for control and indication of power to the remotely located preamplifier. The MC-202 Multicoupler consists essentially of two RF amplifiers that feed eight resistive networks used to couple the signal to the inputs of the associated receivers. Since the Multicoupler may be used with any type of telemetry receiving system, operation as discussed herein will be limited to generalities concerning any associated equipment.

3-7. PLACING THE EQUIPMENT IN OPERATION.

(a) Turn the power switch for the Preamplfier, located on the front panel of the Multicoupler, to the "ON" position. Preamplifier pilot lamp should light.

(b) Place the power switch for the Multicoupler, located on the front panel of the Multicoupler, in the "ON" position. Multicoupler pilot lamp should light.

(c) Thirty seconds after application of power to the Multicoupler, the system is ready to operate.

3-8. SECURING THE EQUIPMENT.

(a) Place Multicoupler power switch in the "OFF" position. Multicoupler pilot lamp should go out.

(b) Place Preamplifier power switch in the "OFF" position. Preamplifier pilot lamp should go out.

(c) The equipment is secured.

SECTION 4

MAINTENANCE

4-1. PREVENTIVE MAINTENANCE.

Preventive maintenance is work performed on equipments at regularly scheduled intervals, usually when the equipment is not in use, to assure the equipment is in good working order sot that interruptions and needless breakdowns may be held to a minimum. Preventive maintenance differs from trouble shooting and repair sinceits object is to prevent certain troubles from developing.

4-2. PREVENTIVE MAINTENANCE TECHNIQUES.

No special tools or materials are supplied or required for preventive maintenance of the Model MC-202 Multicoupler. The common and readily available tools and materials listed below will suffice for the bulk of preventive maintenance work to be performed:

(a) Use #0000 sandpaper to remove corrosion.

(b) Use a clean, dry, lint-free cloth or dry brush for cleaning.

(c) If necessary, except for electrical contacts, moisten the cloth or brush with a Dry Cleaning Solvent; then wipe the parts dry with a clean lint-free cloth.

(d) Clean electrical contacts with a cloth moistened with methyl chloroform, or alcohol, then wipe dry with a cloth.

(e) If available, dry compressed air may be used at a line pressure not exceeding 60 psi to remove dust from the inaccessible places. Be careful however, of mechanical damage due to the air blast. Preventive maintenance personnel are urged to be alert for loose or otherwise defective connections or solder joints, broken components, or loose or defective hardware.

4-3. PERFORMING PREVENTIVE MAINTENANCE.

The following preventive maintenance operations should be performed at the intervals indicated. Use caution to see that screws and nuts are not tightened carelessly. Fittings tightened beyond their rated capacity may be damaged or broken.

TABLE 4-1.

PREVENTIVE MAINTENANCE SCHEDULE

DAILY

1. Clean exterior surfaces of front panels.
2. Check operation of all pilot lights.
3. Check all operating fuses to see that none show signs of over-heating.

WEEKLY

Caution: Turn off all power to the equipment before performing the following operations. Upon completion, turn on power and check for satisfactory operation.

1. Clean rear and sides of each equipment. Do not disturb any adjustments or controls. Do not clean interior of chassis or wiring beneath the chassis except by carefully blowing and dusting with an air hose.
2. Inspect filter capacitors for leakage of oil or dielectrid, for bulging and/or heating.
3. Inspect power and filament transformers for excessive heating.
4. Inspect fuses and fuseholders for corrosion, cracks, and lack of necessary tension to insure good contact.

MONTHLY

Make a visual inspection of the following; tighten and/or clean if necessary.

1. Tube sockets and pins, for loose contacts, dust, and corrosion. Check vacuum tubes if applicable, and replace as necessary.

2. Filter capacitor terminals for corrosion.

3. Resistors for blistering, discoloration, and other evidences of overheating.

4. Switches for dirt, corrosion, loose contacts, and unsatisfactory operation.

5. Wires, for cracked, cut and frayed insulation.

6. Terminal boards, for dirt and loose connections.

7. Matching screws and nuts for mechanical looseness.

8. Input and output connections for corrosion and looseness.

9. Finish for scratches and bare spots (Retouch as necessary).

10. Check major voltages against the Tube Socket Voltage Chart for correctness. (B plus and filaments, etc.)

TABLE 4-2

NORMAL TUBE SOCKET VOLTAGES

Symbol No.	Type	Pin Numbers 1	2	3	4	5	6	7	8	9
V-101	5842/ 417A	102	0	0	0	0	.63	0	0	6VAC RMS
V-102	5842/ 417A	102	0	0	0	0	.57	0	0	6VAC RMS

NOTES: 1.B plus at power supply approximately 105 volts DC.

2.B minus at power supply approximately 10 volts DC.

3. All voltages measured with respect to chassis ground with High-Impedance VTVM, such as RCA WV-87A, or equivalent.

4. Power input to unit to be 115 volts ac, 60 cycles, single phase, alternating current.

4-4. LUBRICATION.

The Model MC-202 Multicoupler does not require lubriation. Lubrication of controls may actually cause harm, or lead to binding or equipment failure.

4-5. TROUBLE SHOOTING.

The trouble shooting and repair work that may be performed by the range maintenance personnel is necessarily limited in scope by tools, test equipment, and replaceable parts issued. Accordingly the trouble shooting described herein is based on the performance of the equipment and the use of the senses or a standard Volt-Ohmeter in determining such trouble as burned out tubes, broken resistors, etc.

4-6. MOUNTING.

The Model MC-202 Multicoupler has been provided with the latest and most efficient shock mounting available for equipment to be used in conjunction with aircraft. Should this mounting become jammed or defective, serious damage may result to the equipment due to excessive vibration while the air-craft is in motion. Regular checks must be made to assure that the mounting has sufficient space to move freely in all directions.

4-7. IMPROPERLY OPERATING MULTICOUPLER.

If the Multicoupler operates improperly, it is usually possible to deduce the cause by the symptoms present. Familiarity of all maintenance personnel with the Theory of Operation as presented in Section 2 of this manual is essential for successful trouble shooting. The schematic diagram in Figure 5-1 is also provided for the convenience of the service technician. The first step in performing efficient trouble shooting is to determine as precisely as possible, the nature of the defect, such as blown fuse, burnt out pilot lamp, etc. Very often the nature of the difficulty will point to the section of the unit where the trouble lies. Experience has shown that vacuum tubes are the most frequent cause of breakdowns. Visual inspection may give some clue to the exact location of the difficulty, such as a burned or broken resistor, short or open in the wiring or damaged components, etc.

Table 4-2 is a voltage chart of the unit under normal operating conditions with no signal input; comparison of the various voltages in the unit with those shown in the voltage chart may indicate the area of the trouble.

4-8. INOPERATIVE MULTICOUPLER.

Maintenance personnel should check for all of the most obvious faults such as burned fuses, broken power lines, and/or broken or disconnected power plugs. Check to make certain that all power switches are in the "ON" position. If lack of operation is caused by the absence of any signal, switch to another receiver output connector on the multicoupler to ascertain if this condition is common to all outputs or to just one. Check power supply voltages and compare with those given in Table 4-2. Check all tubes to be certain none have failed. If no tubes are found to be defective, check for continuity in the input cable. If only one receiver output is inoperative, check for continuity in the associated cable. Futher localization of the defect in a similar manner will allow the multicoupler to be repaired and placed in operation with a minimum of delay.

4-9. REMOVAL OF MULTICOUPLER CHASSIS.

The chassis of the Multicoupler may be removed from the housing by performing the following steps;

(a) Unscrew and disconnect the Amphenol connector, P-101, at the rear of the Multicoupler housing.

(b) Unscrew and remove the six retaining screws in the front panel.

(c) Using a smooth even motion, withdraw the Multicoupler chassis from the housihg.

4-10. TUBE CHECKING;

The high frequency tubes used in this equipment are recently designed and produced and consequently only the most modern tube checkers will have provisions for testing them.

In the event that such a tube checker is available to base maintenance personnel, the tubes should be removed, cleaned, inspected, and tested one at a time, the first tube being reinstalled before proceeding to the next. To remove a miniature tube, first remove the shield, and then using a suitable tube puller, pull the tube straight out of the socket. When replacing a miniature tube, first align the tube pins with the socket holes, and with a smooth motion, force the tube into the socket.

4-11. CLEANING AND INSPECTING CHASSIS ASSEMBLIES.

(a) Cleaning. Thorough cleaning at regular intervals is necessary to assure optimum uninterrupted performance by preventing corrosion and dirt from damaging parts or causing arc-over or low-resistance leakage leakage between circuit points. Remove loose dirt from the outside areas of the chassis with a soft brush or blower. With a brush or cloth remove all dirt or grease which adheres to the outer portions of the chassis and panels. Blow out dust from the inner portions of the chassis. Be careful that the air pressure is not great enough to damage parts or disturb wiring.

(b) Inspecting. After cleaning, make a visual inspection of parts and wiring for corrosion, loose connections, frayed and burned insulation, loose screws, and burned or charred resistors. Carefully inspect tube sockets for broken contacts, capacitors and sealed transformers for signs of leakage of oil of filling compound, terminal boards for broken lugs and signs of burning.

4-12. REPLACEMENT OF PARTS.

Most of the parts in the multicoupler are readily accessible and are easily replaced if found to be defective. Whenever a part requiring the disconnection of many wires, such as a transformer, is to be replaced, carefully mark the disconnected wires with tags or other devices to avoid misconnection.

After replacement, all solder joints should be carefully inspected for secure mechanical and electrical connections, and absence of any evidence of cold solder joints.

4-13. REPLACEMENT OF SILICON-JUNCTION RECTIFIERS.

The type silicon-junction rectifier used in the MC-202 RF Multicoupler has an extremely long life expectancy and will not normally require replacement. However, if replacement becomes necessary, refer to the following procedure:

(a) Grasp the lead to the rectifier with a pair of needle-nose pliers to prevent excessive heat from reaching the delicate rectifier.

(b) Unsolder and remove the lead from the terminal post.

(c) Repeat the above operations on the other end of the diode. This completes the removal procedure.

(d) Bend the leads of the replacement rectifier around both terminal posts.

(e) Grasping each lead alternately with a pair of needle-nose pliers to prevent excessive heat from reaching the diode, resolder each lead. This completes the replacement.

4-14. REFINISHING.

Badly marred or scratched panels should have the damaged area sanded smooth with fine sandpaper and then be retouched with matching enamel.

4-15. TEST EQUIPMENT REQUIRED FOR ALIGNMENT.

The following equipment is required for performing the alignment procedures:

(a) Transition Model SG-132 Sweep Generator, or equivalent.

(b) Output Detector: See Figure 4-4.

(c) Assorted 50 ohm cables and connectors.

(d) Micro-Lab AB-6 6.0 db attenuator.

4-16. MODEL MC-202 MULTICOUPLER ALIGNMENT PROCEDURE.

The Model MC-202 Multicoupler will normally maintain good alignment for long periods of time and will require little or no realignment. If, however, a tube or component is changed and it becomes obvious that the equipment will require realignment, refer to the following procedure for instructions. The schematic diagram, Figure 5-1, will also prove to be of value in following the alignment procedure.

4-17. OUTPUT STAGE.

(a) Connect the output detector (see Figure 4-4) to output connector, J-107.

(b) Unsolder C-107 from the cathode pin of V-102. (Pin #6)

(c) Solder the center conductor of a short length of RG-55/U cable through a .001 µf disc ceramic capacitor to pin #6 of V-102.

(d) Adjust the sweep generator for 240 mc center frequency and 20% deviation. Use the maximum output, 110,000 microvolts.

(e) Adjust L-107, C-111, and L-108, for a transitionally coupled response centered at 238 mc. (L-108 is adjusted by a slight bending of the lead connecting L-107 to C-110.)

(f) Remove the signal generator cable from V-102 and reconnect C-107. (L-105 consists of the leads of C-107, and it is important to maintain the same lead length when reconnecting C-107).

4-18. OVERALL.

(a) Connect the SG-132 Sweep Generator to the input jack, J-103.

(b) Adjust L-103, L-104 and C-107 for an overall response curve centered at 238 mc with response down approximately .85 db at 215 and 260 mc. The maximum peak response in the pass band referred to the 238 mc level is plus 0.3 db.

4-19. INPUT STANDING WAVE RATIO.

(a) C-101 should be adjusted for minimum SWR on the input transmission line over the frequency range of 215 to 260 mc. This may be done by connecting the sweep generator (using the same calibration as for step 4-17, (d).) to J-103 through a long length of RG-55/U cable. Approximately 25 to 30 feet of cable is required. The output detector is connected by means of a "T" connector to the signal generator output connector. Before connecting the cable to the Multicoupler, adjust the vertical gain of the SG-132 for a peak-to-peak deflection of 2 divisions. The pattern seen will represent maximum SWR on the open ended cable.

(b) After connecting the cable to the input of the Multicoupler, adjust the capacitor, C-101, for a minimum SWR pattern. The maximum peak-to-peak deflection should be about 0.2 divisions, corresponding to and SWR of 1.2.

(c) If the minimum of the SWR display is not centered at 238 mc, adjust the inductor, L-101, by changing the lead length of C-102 as needed. Recheck the response curve after adjusting C-101.

(d) Remove all test equipment, and reassemble the Multicoupler. This completes the alignment procedure.

SECTION 5

PARTS LIST MODEL MC-202

R.F. MULTICOUPLER

When ordering replacement parts, give the equipment name and model number, and the symbol number and description of each item ordered.

Replacement parts which will be supplied against an order may not be exact duplicates of the original parts. However, only minor differences in the electrical or mechanical charateristics will be involved, and, consequently, will in no way impair the operation of the equipment.

SECTION 5

MAINTENANCE PARTS LIST (MC-202)

REF SYMBOL NO.	NAME OF PART & DESCRIPTION
C-101	CAPACITOR, VARIABLE, CERAMIC: 4 to 30 μμf type TS-2A, 500V Erie CV11C300
C-102	CAPACITOR, CERAMIC: 470 μμf ±10% style 331, 500V, Erie GP2-331.
C-103	CAPACITOR, CERAMIC: stand-off, .001 mfd, 500V, Sprague 507C2
C-104	Same as C-103.
C-105	CAPACITOR, SILVERED MICA: stand-off, 1000 μμf, Erie 370FA
C-106	Same as C-103.
C-107	Same as C-101.
C-108	Same as C-103.
C-109	Same as C-103.
C-110	Same as C-105.
C-111	CAPACITOR, VARIABLE, CERAMIC: 1.5 to 12.5 μμf, 500V, Cambridge Thermionic CST-50.
C-112	Same as C-103.
C-113	CAPACITOR, ELECTROLYTIC: 4 mfd, 400V, Astron CP53BIE405M.
C-114	Same as C-113.
C-115	CAPACITOR, CERAMIC: non-insulated 5.1 μμf ±.5 μμf, 500V, Erie CC20CH5R1D
C-116	Same as C-103.
C-117	Same as C-103.
C-118	Same as C-103.
C-119	Same as C-103.
CR-101	RECTIFIER, silicon, Raytheon Mfg. IN539
CR-102	Same as CR-101.
CR-103	Same as CR-101.

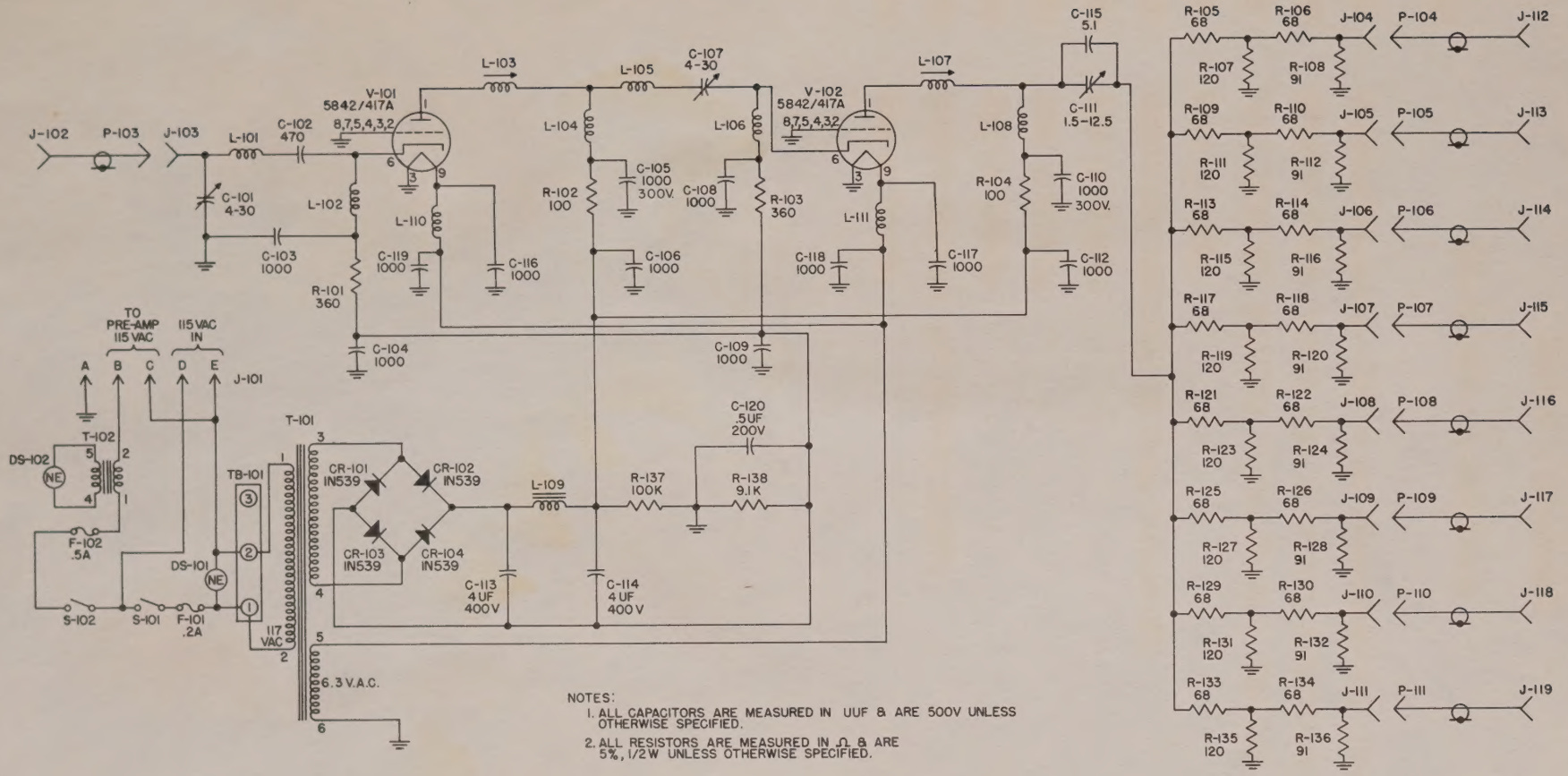
REF SYMBOL NO.	NAME OF PART & DESCRIPTION
CR-104	Same as CR-101.
DS-101	LAMP, INDICATOR: with resistor, clear lens with NE-51, bulb, Dialco 53408-997
DS-102	LAMP, INDICATOR: min. bay base, clear lens with #47 bulb, LH62-PR2, Dialco 53410-997
F-101	FUSE, CARTRIDGE: slo-blo, .2 amp, MDL, Bussman F02R200B
F-102	FUSE, CARTRIDGE: slo-blo, .5 amp, MDL, Bussman F02R500B
F-103	Same as F-101.
F-104	Same as F-102.
J-101	CONNECTOR, RECEPTACLE: male, 5 contact, Amphenol AN3102-14S-2P
J-102	CONNECTOR, RECEPTACLE: UG-704/U
J-103	CONNECTOR, RECEPTACLE: UG-1094/U
J-104	Same as J-103.
J-105	Same as J-103.
J-106	Same as J-103.
J-107	Same as J-103.
J-108	Same as J-103.
J-109	Same as J-103.
J-110	Same as J-103.
J-111	Same as J-103.
J-112	Same as J-102.
J-113	Same as J-102.
J-114	Same as J-102.
J-115	Same as J-102.
J-116	Same as J-102.
J-117	Same as J-102.

REF SYMBOL NO.	NAME OF PART & DESCRIPTION
J-118	Same as J-102.
J-119	Same as J-102.
L-101	INDUCTANCE: 7/16" lead of C-102.
L-102	CHOKE, per NEMS-CLARKE Dwg. #A-17,422.
L-103	INDUCTANCE, per NEMS-CLARKE Dwg. #A-19,887-1.
L-104	INDUCTANCE, per NEMS-CLARKE Dwg. #A-19,888
L-105	INDUCTANCE, 1/2" length of #22 Buss wire
L-106	Same as L-102.
L-107	INDUCTANCE, per NEMS-CLARKE Dwg. #A-19,887-2
L-108	INDUCTANCE, 1" length of #22 Buss wire
L-109	REACTOR, CHOKE: 18 hy, 55 ma per NEMS-CLARKE Dwg. #AB-17,400
L-110	Same as L-102.
L-111	Same as L-102.
P-101	CONNECTOR; plug and cable clamp, AmphenolAN3106-14S-5S/AN3057-6
P-102	CONNECTOR: plug, UG-709A/U
P-103	CONNECTOR: plug, UG-88/U
P-104	Same as P-103.
P-105	Same as P-103.
P-106	Same as P-103.
P-107	Same as P-103.
P-108	Same as P-103.
P-109	Same as P-103.
P-110	Same as P-103.
P-111	Same as P-103.
P-112	Same as P-102.

REF SYMBOL NO.	NAME OF PART & DESCRIPTION
P-113	Same as P-102.
P-114	Same as P-102.
P-115	Same as P-102.
P-116	Same as P-102.
P-117	Same as P-102.
P-118	Same as P-102.
P-119	Same as P-102.
R-101	RESISTOR, FIXED, COMPOSITION: 360 ohms, ±5%, 1/2W, Allen Bradley RC20GF361J.
R-102	RESISTOR, FIXED, COMPOSITION: 100 ohms ±5%, 1/2W, Allen Bradley RC20GF101J
R-103	Same as R-101.
R-104	Same as R-102.
R-105	RESISTOR: FIXED, COMPOSITION: 68 ohms, ±5%, 1/2W, Allen Bradley RC20GF680J
R-106	Same as R-105.
R-107	RESISTOR, FIXED, COMPOSITION: 120 ohms, ±5%, 1/2W, Allen Bradley RC20GF121J
R-108	RESISTOR, FIXED, COMPOSITION: 91 ohms ±5%, 1/2W, Allen Bradley RC20GF910J
R-109	Same as R-105.
R-110	Same as R-105.
R-111	Same as R-107.
R-112	Same as R-108.
R-113	Same as R-105.
R-114	Same as R-105.
R-115	Same as R-107.

REF SYMBOL NO.	NAME OF PART & DESCRIPTION
R-116	Same as R-108.
R-117	Same as R-105.
R-118	Same as R-105.
R-119	Same as R-107.
R-120	Same as R-108.
R-121	Same as R-105.
R-122	Same as R-105.
R-123	Same as R-107.
R-124	Same as R-108.
R-125	Same as R-105.
R-126	Same as R-105.
R-127	Same as R-107.
R-128	Same as R-108.
R-129	Same as R-105.
R-130	Same as R-105.
R-131	Same as R-107.
R-132	Same as R-108.
R-133	Same as R-105.
R-134	Same as R-107.
R-136	Same as R-108.
R-137	RESISTOR, FIXED, COMPOSITION: 100K, 5%, 1/2W, Allen Bradley RC20GF104J
R-138	RESISTOR, FIXED, COMPOSITION: 9.1K 5%, 1/2W, Allen Bradley RC20GF912J
S-101	SWITCH; toggle, SPST, ST42A, Cutler Hammar CH8803K10
S-102	Same as S-101.

REF SYMBOL NO.	NAME OF PART AND DESCRIPTION
T-101	TRANSFORMER, power, 117V ac per NEMS-CLARKE Dwg. #AB-19,880
TB-101	TERMINAL STRIP: barrier type, 8 section, Cinch-Jones 3-140-Y
V-101	TUBE, ELECTRON: 5842/417A Western Electric 5842/417A
V-102	Same as V-101.
XF-101	FUSEHOLDER: bakelite, 3AF fuse, Bussman HKP
XF-102	Same as XF-101.
XF-103	Same as XF-101.
XF-104	Same as XF-101.
XV-101	SOCKET: electron tube Mycalex 90A299.
XV-102	Same as XV-101.

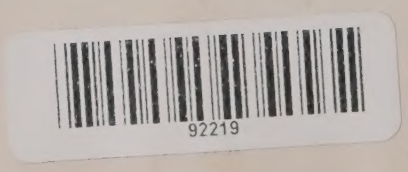


NOTES:

1. ALL CAPACITORS ARE MEASURED IN UUF & ARE 500V UNLESS OTHERWISE SPECIFIED.
2. ALL RESISTORS ARE MEASURED IN Ω & ARE 5%, 1/2W UNLESS OTHERWISE SPECIFIED.

SCHEMATIC, AIRBORNE MULTICOUPLER
MODEL MC-202

D-19,902C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